

**PHOTOSTABILIZATION OF A SUNSCREEN COMPOSITION WITH A  
COMBINATION OF AN  $\alpha$ -CYANO- $\beta,\beta$ -DIPHENYLACRYLATE COMPOUND AND  
A DIALKYL NAPHTHANATE**

**Cross-Reference to Related Application**

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114105*

[0001] This application is a continuation-in-part of co-pending application Serial No. 10/361,223, filed February 10, 2003, which is a continuation-in-part of ~~co-pending~~ application Serial No. 10/241,388, filed September 6, 2002, *now abandoned*.

**Background Of The Invention**

**Field of the Invention**

[0002] The invention relates to sunscreen compositions including a dibenzoylmethane derivative, such as avobenzone, that are made more stable by the addition of (a) an  $\alpha$ -cyano- $\beta,\beta$ -diphenylacrylate compound, e.g., octocrylene, and (b) a diester or polyester of naphthalene dicarboxylic acid (e.g., diethylhexyl 2,6-naphthalate), having a weight ratio of (a)/(b) of at least 0.95, preferably at least about 1.0. More particularly, the invention relates to sunscreen compositions which utilize a combination of octocrylene and diethylhexyl 2,6-naphthalate to stabilize other photoactive compounds present in a sunscreen composition and, in particular, to stabilize dibenzoylmethane derivatives, without, or with levels less than 0.5% by weight of, a methoxy-substituted benzophenone derivative, such as benzophenone-3.

**Brief Description of Related Technology**

[0003] It is well known that ultraviolet radiation (light) having a wavelength from about 280 nm or 290 nm to about 320 nm (UV-B) is harmful to human skin, causing burns that are detrimental to the development of a good sun tan. UV-A radiation (about 320 nm to about 400 nm), while producing tanning of the skin, also can cause damage, particularly to very lightly-colored or sensitive skin, leading to reduction of skin elasticity and to wrinkles. Therefore, a sunscreen composition for use on human skin preferably includes both a UV-A and a UV-B filter to prevent most of the sunlight within the full range of about 280 nm or 290 nm to about 400 nm from damaging human skin.

[0004] Ultraviolet radiation from the sun or artificial sources can also cause harm to coatings containing photoactive substances, such as photoactive pigments and dyes, by breaking down chemical bonds in the structure of a component such as a polymer, a pigment, or a dye. This photodegradation can lead to color fading, loss of gloss, and loss of physical